

DENSIC TAXA AT THE GREAT GROUP LEVEL FOR AQUEPTS AND UDEPTS

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In the glaciated northeast many of the Inceptisols have densic contacts within 100 cm of the soil surface. The densic contact is related to the dense till that serves as the parent materials or substratum of many soils in the region and is recognized as densic materials (Soil Survey Staff, 2014). Dense till typically forms as thick glacial ice moves across the landscape compacting the till at the base of the ice (sometimes referred to as lodgement or basal till). The force of the overlying glacial ice results in dense Cd horizons, firm to extremely firm consistence, severely reduced saturated hydraulic conductivity, and high bulk density. Bulk density tends to increase with depth in these soils. Since the restrictive nature of these materials is a function of deposition and compaction by the ice, the dense properties are considered geogenic.

Examples of series with densic contacts in southern New England include Ridgebury, Paxton, and Woodbridge; all which are extensively mapped throughout MLRA 144A. Although, the densic contact has obvious impacts on a large number of soil interpretations, the presence of the densic contact is not made known until the series level in Soil Taxonomy. Prior to the 1980's, these soils were classified as Fragiocrepts (Paxton and Woodbridge) and Fragi aquepts (Ridgebury); recognizing the presence of the densic materials. Since then, fragipans are recognized in only pedogenic horizons and these soils were stripped of the fragipan character association derived from the densic contact at the great group level. This proposal is requesting the addition of densic great groups of Udepts and Aquepts.

For Aquepts:

KAA. Aquepts that have a sulfuric horizon within 50 cm of the mineral soil surface.

Sulfaquepts,

KAB. Other Aquepts that have, within 100 cm of the mineral soil surface, one or more horizons in which plinthite or a cemented diagnostic horizon either forms a continuous phase or constitutes one-half or more of the volume. **Petraquepts,**

KAC. Other Aquepts that have *either*: 1. A salic horizon; *or* 2. In one or more horizons with a total thickness of 25 cm or more within 50 cm of the mineral soil surface, an exchangeable sodium percentage (ESP) of 15 or more (or a sodium adsorption ratio [SAR] of 13 or more) and a decrease in ESP (or SAR) values with increasing depth below 50 cm. **Halaquepts,**

KAD. Other Aquepts that have a fragipan within 100 cm of the mineral soil surface.

Fragiaquepts,

KAE. Other Aquepts that have a geogenic densic contact within 100 cm of the mineral soil surface. **Densiaquepts,**

For Udepts:

Key to Great Groups

KFA. Udepts that have a sulfuric horizon within 50 cm of the mineral soil surface. **Sulfudepts,**

KFB. Other Udepts that have a duripan or another cemented horizon within 100 cm of the mineral soil surface. **Durudepts**,

KFC. Other Udepts that have a fragipan within 100 cm of the mineral soil surface. **Fragiudepts**,

KFD. Other Udepts that have a geogenic densic contact within 100 cm of the mineral soil surface. **Densiudepts**,

Densiaquepts Subgroups

KAEA. Densiaquepts that have, in 50 percent or more of the matrix of one or more horizons either between the plow layer and a depth of 75 cm below the mineral soil surface or, if there is no plow layer, between depths of 15 and 75 cm, chroma of *either*: 1. 3 or more; *or* 2. 2 or more if there are no redox concentrations. **Aeric Densiaquepts**,

KAEB. Other Densiaquepts that have a histic, mollic, or umbric epipedon. **Humic Densiaquepts**

KAEC. Other Densiaquepts. **Typic Densiaquepts**.

Densiudepts Subgroups

KFDA. Densiudepts that have, in one or more horizons within 30 cm of the mineral soil surface, distinct or prominent redox concentrations and also aquic conditions for some time in normal years (or artificial drainage). **Aquic Densiudepts**,

KFDB. Other Fragiudepts that have *one or both* of the following: 1. An umbric or mollic epipedon; *or* 2. A color value, moist, of 3 or less and a color value, dry, of 5 or less (crushed and smoothed sample) either throughout the upper 18 cm of the mineral soil (unmixed) or between the mineral soil surface and a depth of 18 cm after mixing. **Humic Densiudepts**,

KFDC. Other Densiudepts. **Typic Densiudepts**